



# MICROBIOLOGY LAB

**DONE BY :** **Volunteer**

# Microbiology Lab

## التلخيص شامل

### Introduction

المحاضرة رح تكون عن كيفية تشخيص الإلتهابات الفطرية

- **Firstly, how to establish or confirm the diagnosis of a fungal infection?**  
→ skin, hair and nail tissue is collected for microscopy and culture (mycology).

How it is collected? ↓

### Specimen collection for fungal testing

- **Scrapings of scale**, best taken from the leading edge of the rash after the skin has been cleaned with alcohol

مثل ما في الصورة  
كشط القشرة ووضعها في عينة مايكروسكوب



- **Skin stripped off with adhesive tape**, which is then stuck on a glass slide



- **Hair (in case of infected hair)** which has been pulled out from the roots

- **Brushings** from an area of scaling in the scalp

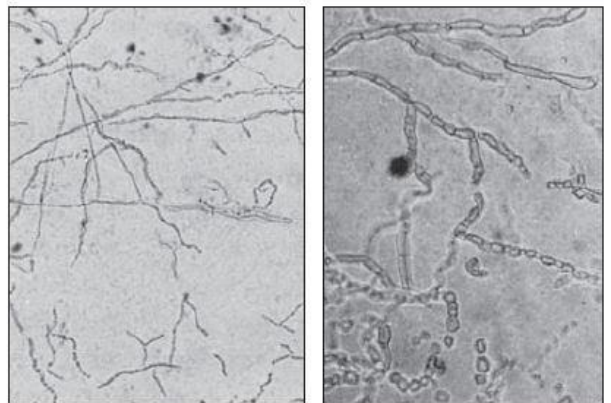
- **Nail clippings or skin scraped from under a nail**

- **Skin biopsy** ( in case of skin melanoma)

### Skin lesion KOH exam

• طيب بعد ما اخذنا العينة بنستخدم KOH test وهو الاختبار الاكثر شيوعا لنرى ال fungi تحت المايكروسكوب

- The skin lesion KOH exam is a simple test that helps to identify fungal infections on a person's skin, hair, and nails.



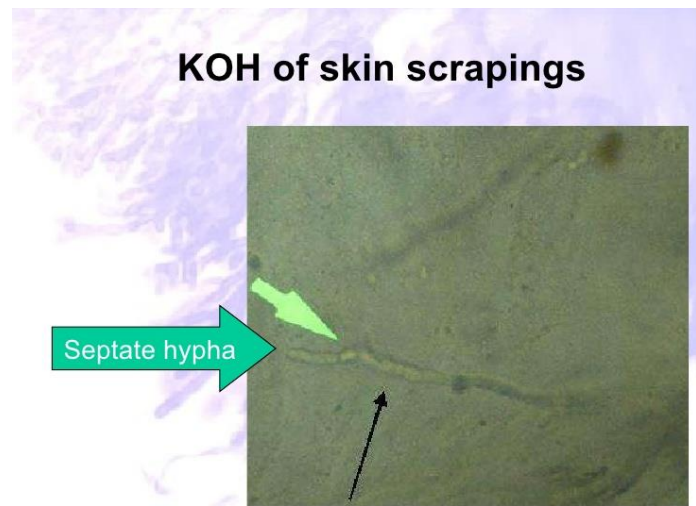
- A skin scraping placed in a potassium hydroxide (KOH) solution and analyze under a microscope.

- The skin lesion KOH exam is also called a **potassium hydroxide test** or a fungal smear.

- The KOH test will check for a range of different fungal infections in the skin, hair, nails, or vaginal secretions.

These infections may include:

- **ringworm**
- **athlete's foot**
- **jock itch**
- **oral or vaginal Candida**



## Procedure

- Examine the affected area before deciding whether to perform a KOH exam.

- A skin lesion KOH exam is very simple and straightforward.

- Take a tool to scrape and remove some of the affected skin, which is called a skin scraping procedure.

- Then place the skin scrapings into a liquid containing potassium hydroxide, or KOH, which will destroy all cells that are not fungal cells.

• KOH يمنع ظهور الخلايا تحت المايكروسكوب بس بظهور الفطريات بحيث اتكون واضحة تماما (تشبهه gram stain of bacteria)

- Next, the sample is looked at under the microscope, making it is very easy to see if there is a fungus in the sample.



<https://www.youtube.com/watch?v=FohwEA5byYM>

الكتور شغل هذا الفيديو في المحاضرة

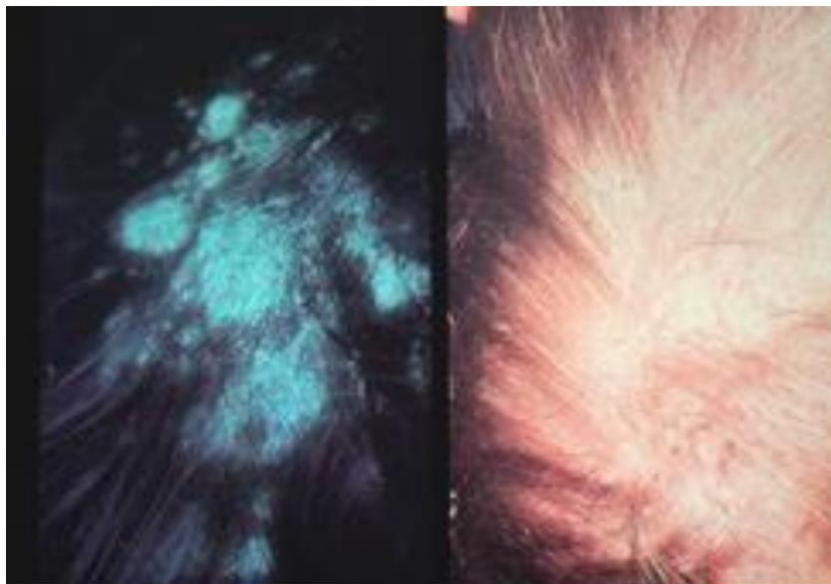
## Wood lamp examination

• A Wood lamp is a lamp that emits long-wavelength radiation. It can be used to detect fungal infections in the hair or scalp.

يوضح هذا الجهاز وجود الفطريات عن طريق تغير اللون و لكن لا يعطي نوع الفطريات او البكتيريا المسببة بس بفرق هل المسبب بكتيريا ام فطريات

• If a fungal infection is present, the sample will glow a greenish or bluish color, making it easy to see and diagnose.

• fluorescent spectroscopy, ultraviolet light to visually diagnose a wide variety of bacterial and fungal skin infections, skin pigment disorders, and other irregularities.



Exposing the site to long-wavelength ultraviolet radiation (Wood lamp) can help identify some fungal infections of hair (tinea capitis) because the infected hair fluoresces green.

## Stained wet-mount

• Stained wet-mount

• A stained wet-mount test is similar to a KOH test, but a blue or black stain is also applied to the sample, making it easier to see fungal cells under the microscope.

## Biopsy

هون بس المهم تعرف ان ↓

the most common media (or the best media) for fungal infection is Sabouraud's dextrose agar



*Candida albicans* in SDA  
Source: Wikipedia

*Trichophyton terrestre* in SDA  
Source: Wikipedia

- Biopsy with special stains
- Biopsy and culture
  - Growing the fungus in culture may take several weeks, incubated at 25–30°C. The specimen is inoculated into a medium such as Sabouraud's dextrose agar containing chloramphenicol.



## Laboratory Identification of *S. aureus*

↓ strep pyogenes مهم تفرق بين صفاتها وصفات ال infection ... هي من اكثر البكتيريا المسببة لل

- A clinical isolate is presumptively identified as *S. aureus* by means of several simple procedures:
- Gram stain: **Gram-positive cocci**, occurring singly, in pairs, or "bunches of grapes."
- Catalase test: **Staphylococci are catalase-positive**, distinguishes them from Streptococci which are catalase-negative.
- Coagulase test: ***S. aureus* is coagulase-positive.**
- DNase test: ***S. aureus* is DNase-positive.**
- Endonuclease: ***S. aureus* is positive.**

## Streptococcus pyogenes (Group A streptococcus)

- a Gram-positive, nonmotile, nonsporeforming coccus that occurs in chains or in pairs of cells.
- catalase-negative
- (facultative anaerobe),

Typical appearance of *S. pyogenes* on sheep-blood agar plates, following 24-hour incubation under aerobic conditions.

